RESPONSE TO COMMENTS FROM THE STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION ON THE DRAFT LONG-TERM MONITORING PLAN, SITE 9 NAVAL AIR STATION BRUNSWICK MAINE

COMMENTOR: Claudia Sait **DATE RECEIVED: 30 June 1999**

The Department of Environmental Protection (DEP or Department) has reviewed the report entitled *Draft Long-Term Monitoring Plan, Site 9 (Neptune Drive Disposal Site)*, dated May 1999, prepared by EA Engineering, Science, and Technology. Based on that review the Department has the following comments and issues.

GENERAL COMMENTS

1. Please change "monitored natural attenuation" to "natural attenuation with long-term monitoring" throughout this document to be consistent with the PRAP language. As has been discussed at RAB meetings, Site 9 monitoring does not conform to EPA's definition of monitored natural attenuation.

   Response—The term "monitored natural attenuation" has been changed to "natural attenuation with long-term monitoring and institutional controls" throughout this document to be consistent with the language used in the Site 9 PRAP.

SPECIFIC COMMENTS

2. ***Purpose and Scope, Section 1.1, Page 1-1, First Paragraph***—"The purpose of the Long-Term Monitoring Program is to identify monitoring that will be conducted to verify the effectiveness of the selected remedial action, monitored natural attenuation, at Site 9."

   See Comment 1 above.

   Response—This change has been made. See Response to Comment No. 1.

3. ***Purpose and Scope, Section 1.1, Page 1-2, Second Paragraph***—This section should be structured like the draft LTMP for Sites 1, 3, and the Eastern Plume (October 1998 version). Starting with the first paragraph on Page 1-2, keep the first paragraph. The entire second paragraph and 4 bullets should be eliminated. Instead of the LTMP objective, the goals as written in the PRAP should be included. The Department suggest the following language:

   The goals of the Long-Term Monitoring Program are to obtain data necessary to document the long-term trends in environmental media at Site 9. These goals are as follows:

   - *Monitor changes in the plume boundaries and potential migration pathways*
   - *Monitor effectiveness of the remedial action for the protection of human health and the environment*

- *Evaluate whether the inactive landfill contents are impacting ground water*

- *Monitor the volatile organic compound contamination to evaluate the effectiveness of natural attenuation and determine trends with time*

- *Monitor impact to the environment due to Site 9.*

Currently, a Final Record of Decision is being prepared for Site 9. The components of the LTMP have been defined based on the Interim Ground-Water Record of Decision for Site 9. The results of the monitoring program will be used to revise this monitoring program and to assess the success of the proposed remedy that is required as part of the Installation Restoration Program activities at Site 9. (Keep the last sentence.*)*

Response—The text of Section 1.1 has been revised as requested above.

4. ***Site Hydrogeology, Section 1.3.2, Page 1-4, Second Paragraph***—This section needs to be expanded to include a discussion of the following:

   - The effect of the impoundments on the stream primarily has been to redirect Site 9 ground-water discharge to the lower pond near the confluence of the north and south branches

   - The ground-water flow pathway leads upgradient to the NEX

   - The pathway has shifted in recent years westward between the NEX and Site 9

   - The addition of a new monitoring well to bound the westward shift.

   Response—The following sentence has been added as the last sentence of the first paragraph of Section 1.3.2:

   One monitoring well (MW-NASB-227) was installed on 9 November 1998, to bound the westward extent of the volatile organic compounds in ground water.

   The additional bullets listed in this comment are not considered to be relevant to the summary of Site Hydrogeology included in this section, as they have not been established conclusively to affect the reported concentrations of vinyl chloride and other contaminants of concern in ground water.

5. ***Long-Term Monitoring, Section 1.3.4, Page 1-5***—For clarity, it should be stated here that the LTMP has two components: the gauging of water elevations in wells and ponds, and water and sediment sampling for contaminants.

   Response—The following text has been added as the second sentence of Section 1.3.4:

   The LTMP is comprised of two components: (1) the gauging of water elevations in monitoring wells and surface water impoundment ponds, and (2) the collection of ground water, surface water, stream sediment, and seep.

6. ***Sampling Locations, Section 1.4.1, Page 1-5, Section Paragraph***—In the first sentence, the first "reported" should be deleted.

   Response—The first "reported" has been removed from the first sentence of Section 1.4.1.

   a. In the second sentence, change "...lack of detections and close locations..." to "...lack of detections and/or close locations...."

      Response—The second sentence has been changed to read "lack of detections and/or close locations...."

   b. Modify the third sentence as follows: "Only three wells (...) will be sampled for Target Analyte List elements as only these wells are immediately downgradient of the landfill."

      Response—The third sentence of Section 1.4.1 has been modified as follows:

      Three wells (...) will be sampled for Target Analyte List elements and semivolatile organic compounds because these wells are immediately downgradient of the ash landfill.

7. ***Sampling Locations, Section 1.4.1, Page 1-5, First Paragraph***—As discussed at technical meetings, Monitoring Well NASB-077 should continue to be monitored (at least for a while) until enough rounds have been analyzed to determined that vinyl chloride is below the Maximum Exposure Guidelines. Section 3.1.1 and Table 1-1 must also be revised to reflect keeping MW-NASB-077.

   Response—Based on discussions at the 5 August 1999 Technical Meeting, monitoring well MW-NASB-077 will not be dropped from the Long-Term Monitoring Program as was noted in the Draft Long-Term Monitoring Plan. The second sentence of Section 1.4.1 has been revised as follows:

   ~~Six~~ Five monitoring wells (MW-NASB-070, MW-NASB-073, ~~MW-NASB-077,~~ MW-NASB-078, MW-NASB-079, and MW-NASB-081) were selected...

   Table 1-1 will indicate that well MW-NASB-077 will be sampled bi-annually.

   Monitoring well MW-NASB-077 has been added to Tables 1-1 and 3-1 for TCL VOC analysis. The following text has been added as footnote (b) on Table 1-1 and footnote (b) on Table 3-1:

   Monitoring well MW-NASB-077 will be analyzed using EPA Method 8260B modified for SIM for two rounds (September 1999 and April 2000). This well will be considered for removal from the Long-Term Monitoring Program if both rounds are non-detect. If vinyl chloride is detected above the Maximum Exposure Guideline, the well will be retained in the Long-Term Monitoring Program.

The first sentence of Section 3.1.1 has been revised as follows:

A total of 12 ~~11~~ site monitoring wells will be sampled to assess ground-water quality at Site 9 (MW-NASB-069, MW-NASB-070, MW-NASB-071, MW-NASB-072, MW-NASB-074, MW-NASB-075, MW-NASB-076, MW-NASB-077, MW-NASB-079, MW-NASB-080, MW-NASB-022, and MW-NASB-227).

The following sentence has been added as the last sentence of Section 3.1.5:

Monitoring well MW-NASB-077 will be sampled for two rounds (September 1999 and April 2000). This well will be considered for removal from the Long-Term Monitoring Program if both rounds are non-detect. If vinyl chloride is detected above the Maximum Exposure Guideline, the well will be retained in the Long-Term Monitoring Program.

8. ***Sampling Locations, Section 1.4.1, Page 1-6, First Paragraph***—The Department still feels strongly that an additional sediment sampling location is necessary. To ensure that contaminated ground water is not discharging to the northern branch of the unnamed stream (now partially impounded), sediment stations must be sampled for VOCs, SVOCs, DRO, and metals. SVOCs and DRO sampling should be run for at least one year to better determine the type of contaminant present. Surface water sampling should continue to target only VOCs. The Department cannot concur with this revised monitoring plan unless this is done.

   Our rationale for adding a SW/SED station to the LTMP is as follows.

   Of particular concern to DEP are the locations of SW-10, SW-11, and SW-12 along the unnamed drainage. VOCs have been analyzed at these surface water stations at Site 9 from Monitoring Event 1 in March 1995 to Monitoring Event 14 in April 1999. Stations SW-11 and SW-12 (along with four other stations) were discontinued after the July 1997 sampling (Monitoring Event 9); the reason given was that the new dams caused these locations to be flooded and ample data were available. However, beginning with Monitoring Event 8, toluene was detected at SW-11 (until cession of sampling in 1997) and 1,2-dichloroethene has been consistently detected at SW-10 each event since.

   VOCs and SVOCs, including vinyl chloride, 1,2-dichloroethene, and trichloroethene, were found in past sediment samplings at stations SW-10 and SW-11, but not at SW-12. Sediment sampling at SW-11 and SW-12 were also discontinued after Monitoring Event 9 in July 1997. Beginning with Monitoring Event 8, concentrations of a number of previously detected SVOCs increased substantially (up to nearly two orders of magnitude) at SW-10 and SW-11. An exception is that at SW-11, Monitoring Event 6 gave similarly elevated readings.

   In the Department's opinion, it is unlikely that the above contaminants in surface water and sediments are due largely to non-point base runoff. Instead, we believe that the now documented shifting of ground-water flow lines probably due to air sparging at the NEX and the creation of detention ponds in the headwaters of the unnamed stream is altering the discharge of contaminated ground water to the stream/ponds. The very low dissolved oxygen content in the shallow ground water may also be a contributing factor.

In summary, a change in contaminant distribution in both media is suggested by the results of Monitoring Events 8 and 9, but the discontinuation of stations SW-11 and SW-12 occurred at an inopportune time, in retrospect. While the accurate quantification of VOCs in stream water is problematic, the possible accumulation of contaminants in sediment under the new ground water/surface hydraulic regime can be, and must be, monitored. Tentatively, DEP recommends that the new sampling station be established at the location of SW-920 on the north branch of the unnamed stream (see Figure 3-1 of the Source Investigation). Sampling under a few feet of ponded water should not pose much of a problem.

Response—Additional sediment sampling at Site 9 was discussed at the 5 August 1999 Technical Meeting. During meeting discussions, it was noted that the sediment within the Site 9 impoundment ponds is removed every 5 years and, therefore, additional sediment sampling would be of little use. The SVOC concentrations in sediment, which MEDEP believes are suspected to be the result of ground water, could best be addressed by additional ground-water sampling. Therefore, the LTMP has been modified to note SVOC analysis will be conducted on ground-water samples from the three monitoring wells located downgradient of the landfill (MW-NASB-069, MW-NASB-070, and MW-NASB-079). These additional data will be used to determine whether SVOC may be migrating from the landfill. The following changes have been made.

- The third sentence of Section 1.4.1 has been revised as indicated in response to Comment No. 6b.

- Table 1-1 of the Long-Term Monitoring Plan has been revised to include the sample parameter SVOC for wells MW-NASB-069, MW-NASB-070, and MW-NASB-079. Table 1-1 will indicate that well MW-NASB-079 is sampled bi-annually.

- The following text has been added as the fourth bullet of Section 3.3 of the LTMP and the third bullet of Section 5.2 of the Quality Assurance Project Plan:

  Target Compound List semivolatile organic compounds by EPA SW-846 Method 3520A/8270C.

- Table 3-1 of the LTMP has been revised to include the sample parameter SVOC for wells MW-NASB-069, MW-NASB-070, and MW-NASB-079.

- The fifth bullet of Section A.1.4 has been revised to include SVOC.

- The following text has been added as the second bullet of Section A.1.5:

  SVOC—Fill the sample bottle, seal with a Teflon-lined cap, and place on ice for shipment.

- Table 3-1 has been revised to include Target Compound List semivolatile organic compounds.

- The following text has been added as Section 5.2.3 of the QAPP:

  5.2.3 Semivolatiles

  Benzo(a)pyrene, a Target Compound List semivolatile, will be determined in the HPLC fraction to meet the Federal Maximum Contaminant Level.

- Tables 5-1 and 5-2 and Attachments A-1 through A-3 have been revised to include SVOC by EPA SW-846 Method 3520A/8270C.

9. ***Staff Gauge Monitoring, Section 1.4.4, Page 1-6, Second Sentence***—Change "will be" to "*has been.*"

   Response—The second sentence has been changed from "will be" to "has been" as requested.

10. ***Regulatory Framework, Section 2, Page 2-1***

    (a) "Because the selected remedy (monitored natural attenuation) leaves contaminants onsite and does not immediately allow for unlimited use and unrestricted access, a 5-year statutory review is appropriate."

    Isn't the 5-year review required? The Department recommends the following language:

    Because the selected remedy (natural attenuation with long-term monitoring) leaves contaminants onsite and does not immediately allow for unlimited use and unrestricted access, a 5-year statutory review is required.

    Response—Section 2 has been revised as recommended above.

    (b) "This LTMP revision will allow the Navy to collect data to conduct 5-year reviews." This doesn't make sense. DEP suggests: "*The LTMP will allow...*"

    Response—The word "revision" has been removed from the sentence as requested.

11. ***Sampling Frequency, Section 3.1.5, Page 3-2, Second Sentence***—"If compound concentrations remain consistent or decrease over time, the monitoring frequency may be changed with approval by EPA and MEDEP."

    While it is not anticipated, compound concentrations could increase over time, therefore, DEP suggests the following language which allows for all eventualities:

    Depending on the long-term trends of the compound concentrations, monitoring frequency may be changed with approval by EPA and MEDEP.

    Response—Section 3.1.5 has been revised as suggested above.

12. ***Analytical Parameters and Procedures, Section 3.3, Page 3-3, Third Bullet***—Dissolved oxygen and Eh should be removed from an optional status, and be included as part of the standard Site 9 suite of field measurements. This is because these tests are integral components of monitoring of natural attenuation, and if a rigorous evaluation of natural degradation should be undertaken in the future, these data will be valuable. Let's make sure that DO and Eh will not be dropped, and formally recognize them as important parameters.

    Response—Disagree. Although these parameters will continue to be collected, they should remain as optional. The usefulness of collecting these parameters has not yet been conclusively established.

13. ***Analytical Parameters and Procedures, Section 3.3, Page 3-3, Fourth Bullet***—"Water elevations will be recorded prior to sampling site monitoring wells."

    This subject does not belong under the section heading. Please delete this bullet.

    Response—The fourth bullet has been removed from Section 3.3 as requested.

14. ***Program Modifications, Section 3.3.1, Page 3-3***—"A reduction or elimination of monitoring points included in the LTMP may be appropriate if contamination concentrations are consistently below drinking water criteria...."

    This statement needs to be revised to include the possibility of increasing or modifying the monitoring points. DEP suggests the following language:

    > *Modifications to the monitoring network included in the LTMP may be appropriate if a trend of contamination concentrations change significantly (e.g., four monitoring rounds).*

    Response—The second sentence of Section 3.3.1 has been revised as suggested above, with the exception of the specific citation of four monitoring rounds. The specific citation of four monitoring rounds seems to be unsupported by site data, and appears to be an arbitrary selection of a time interval. Therefore, a specific number of sampling rounds will not be added as noted in this comment.

15. ***Data Reduction and Data Quality Review, Section 3.3.2, Page 3-3, Third sentence***—"The findings of the data quality review will be included in the monitoring event report, and will report significant data discrepancies which may affect analytical data usability."

    These findings must be summarized in the annual reports as well. Therefore, annual report should also be named in this sentence.

    Response—The sentence has been revised as follows:

    > *The findings of the sample analytical data quality review will be included in the monitoring event and annual reports, and will report significant data discrepancies which may affect analytical data usability.*

16. ***Laboratory Quality Assurance and Quality Control, Section 3.3.4, Page 3-4***

(a) "The data will be evaluated and reported to the regulatory agencies." The following rewrite is recommended:

"The data will be evaluated and reported in individual monitoring events and annual reports."

Response—The second sentence of Section 3.3.3 has been revised as follows:

The data will be evaluated and reported to the regulatory agencies in the monitoring event and annual reports.

(b) "The usefulness of the data will depend on the contaminant levels relative to the detection limits during a specific sampling event and the reason for the laboratory's inability to meet the detection limit."

This statement may be construed as applying to all data for each event, whereas only in limited instances should data quality be an issue. To provide a "backdrop," the following should be inserted to the front of the above text:

It is anticipated that, occasionally, a small fraction of monitoring event data will have detection limit issues; when this happens....

Response—This text is considered unnecessary, and for clarity the last sentence from Section 3.3 has been removed.

17. ***Appendix A.2.4, Sampling Procedure, Second Set of Bullets, Second Bullet***— Prior to accepting this LTMP, the Department would like to discuss options for changing the depth that samples are collect in surface waterbodies. The most environmental value would be gained from samples collected within 0.5 ft of the stream bed. This concept appears to be supported by experiences with diffusion sampling data presented at recent conferences.

Response—The surface waterbodies sampled at Site 9 are less than 0.5 ft deep. The issue of the sampling depth for surface water samples was discussed at the 5 August 1999 Technical Meeting. The Long-Term Monitoring Program methods will remain the same and specific sampling would be considered on a case-by-case basis, depending on the goals of future sampling.

18. ***Appendix B, 2.3, Data Uses, Page 2-1***—The additional goals of the monitoring plan (see Comment No. 3 above) need to be included here.

Response—Section 2.3 has been revised as follows:

Long-term monitoring data will be used to ~~evaluate the effectiveness of the soil and debris removal in areas upgradient of existing site monitoring wells~~, monitor changes in the plume boundaries and potential migration pathways, monitor the effectiveness of the remedial action for protection of human health and the environment, evaluate whether

the inactive landfill contents are impacting ground water, monitor the volatile organic compound contamination to evaluate the effectiveness of natural attenuation and evaluate trends with time, and monitor impact to the environment of Site 9.

19. ***Appendix B, Table 5-2, Note f***—Note f indicates that a secondary method for vinyl chloride is being considered. Please specify the analysis technique that will be used to assure detection of vinyl chloride at the State Maximum Exposure Guideline.

    Response—The text has been changed as follows:

    If a monitoring well is being considered for deletion from the sampling program for volatile organic compounds, ground-water samples from that well will be analyzed using Method 8260B modified for SIM for two sampling rounds, in order to achieve the detection limit of 0.15 • g/L (State MEG for vinyl chloride). This method will not be used at a well where vinyl chloride is known to be above 2 • g/L, as established using EPA Method 8260B.

20. ***Appendix B, Table 8-1***—In the instrument maintenance section, the GC maintenance portion appears to be missing. Please provide.

    Response—The GC/MS maintenance section has been revised to include GC maintenance.

21. ***Attachment A-1, Summary of Laboratory..., First Page***—The holding time does not include flagging the report. Either reports should be flagged, or some other mechanism should be worked out to assure samples have been analyzed within the holding time.

    Response—This comment is unclear. If samples were to be run outside of holding times, that would be noted in the PARC assessment, as stated in the third bullet of Section 9.3.1 of the QAPP. However, the stated process of corrective action allows for notification prior to analysis to determine if analysis should still be performed.

22. ***Attachment A-1, Summary of Laboratory...***—Laboratory control samples and matrix spikes for Method 8260B should be fortified with analytes of concern. The history at this site indicates the presence of vinyl chloride, 1,2-dichloroethene, and 1,1-dichloroethane, yet none of these analytes are included in the QC samples. Control limits should also be set for these analytes in the QC samples.

    Response—The analytical laboratory uses the full list of analytes for EPA Method 8260B for laboratory control samples and matrix spikes. Attachment A-2 has been updated to include the full list of analytes and their control limits.